Please amend the claims as follows. This listing of the claims will replace all prior versions and listings of claims in the application.

Claims 1 - 40 (canceled).

Claim 41 (previously presented): A system for monitoring the performance of DWDM multi-wavelength systems comprising:

means for converting an optical signal for a particular wavelength from the DWDM multi-wavelength system to an electrical signal;

D1

means for processing the electrical signal to determine the performance of the DWDM multi-wavelength system at the particular wavelength and for controlling the converting means so that each particular wavelength of the DWDM multi-wavelength system is processed and wherein the converting means comprises:

means for mixing the optical signal with a tunable reference optical signal to produce a combined optical signal; and

a photodetector for converting the combined signal to the electrical signal, wherein the mixing means comprises:

means for dividing the optical signal and the reference optical signal each into corresponding orthogonal polarized beams; and

means for combining the respective polarized beams of like polarization to form a pair of combined optical signals as the combined optical signal.

Claim 42 (previously presented): The system as recited in Claim 41 wherein the photodetector comprises a pair of photodetectors having the respective combined polarization beams as input and providing a pair of electrical signals at the respective outputs as the electrical signal.

Claims 43 - 44 (canceled).

Claim 45 (new): A system for monitoring the performance of a DWDM multi-wavelength system comprising:

D2

means for converting a portion of an optical signal from the DWDM multi-wavelength system at a particular wavelength to an electrical signal; and

means for processing the electrical signal to determine the performance of the DWDM multi-wavelength system at the particular wavelength and for controlling the converting means so that each particular wavelength of the DWDM multi-wavelength system is processed.

Claim 46 (new): The system as recited in claim 45 wherein the converting means comprises a narrow-band tunable bandpass filter having the optical signal as an input and providing the electrical signal as an output.

Claim 47 (new): The system as recited in claim 45 wherein the converting means comprises:

an optical unit having the optical signal as an input and the particular wavelength portion as an output; and

a photodetector having the particular wavelength portion as an input and the electrical signal as an output.

Claim 48 (new): The system as recited in claim 47 wherein the converting means further comprises a lowpass filter having an input coupled to the output of the photodetector and having an output to produce the electrical signal.

D2

Claim 49 (new): The system as recited in claim 47 wherein the optical unit comprises a grating spectrometer having the optical signal as an input and providing the particular wavelength portion as an output.

Claim 50 (new): The system as recited in claim 49 wherein the grating spectrometer comprises:

a movable grating having a wavelength range that covers a measurement range for the DWDM multi-wavelength system;

an imaging element for reflecting the optical signal; and

a beam deflection system mounted such that the optical signal incident on the imaging element and the optical signal exiting from the imaging element are essentially symmetrical, the movement of the movable grating selecting the particular wavelength portion, and the optical signal being subjected to multiple passes between the movable grating and the imaging element.

Claim 51 (new): The system as recited in claim 50 wherein the movable grating is mounted with respect to the imaging element and the beam deflection system in a combined array according to Ebert and Faustie and by approximation in a Littrow array.

Claim 52 (new): The system as recited in claim 50 wherein the grating spectrometer further comprises a dielectric optical filter situated between the movable grating and the imaging element so that reflections of the optical signal between the movable grating and the imaging element are bandpass filtered.

D2

Claim 53 (new): The system as recited in claim 50 wherein the movable grating comprises one selected from the group consisting of a ruled grating and a blazed grating.

Claim 54 (new): The system as recited in claim 50 further comprising means for determining an angular position of the movable grating, the angular position determining the particular wavelength portion.

Claim 55 (new): The system as recited in claim 54 wherein the determining means comprises:

a high precision light source for generating a focused beam;

a reflecting surface rigidly coupled to the movable grating upon which the focused beam impinges; and

a position sensor for receiving the focused beam reflected from the reflecting surface to determine the angular position.

Claim 56 (new): The system as recited in claim 50 further comprising means for moving the angular position of the grating to select the particular wavelength portion.

Claim 57 (new): The system as recited in claim 56 wherein the moving means comprises:

D2

a drive motor coupled to the movable grating for moving the movable grating about a vertical axis in response to a control signal;

a spring-mass array with torsion bars capable of oscillating coupled to the drive motor; and

means for driving the drive motor in response to a control signal from the controlling and processing means.

Claim 58 (new): The system as recited in claim 55 wherein the position sensor comprises:

an incremental scale that influences the intensity of the reflected focused beam as a function of the point on the incremental scale upon which the reflected focused beam impinges; and

a detector for detecting an intensity of light from the incremental scale, the intensity being a measure of the angular position.

Claim 59 (new): The system as recited in claim 45 wherein the converting means comprises:

means for mixing the optical signal with a tunable reference optical signal to produce a combined optical signal; and

a photodetector for converting the combined optical signal to the electrical signal.

Claim 60 (bnew): The system as recited in claim 59 wherein the mixing means comprises:

a tunable laser for providing the tunable reference optical signal under control of the processing and controlling means;

means for selectively polarizing the tunable reference optical signal to produce a polarized reference optical signal in one of two orthogonally polarized states; and

means for combining the optical signal and the polarized reference optical signal to produce the combined optical signal.

Claim 61 (new): The system as recited in claim 60 further comprising a wavelength calibrator for providing a calibrated wavelength optical signal to irradiate the photodetector.

Claim 62 (new): The system as recited in claim 60 wherein the combining means comprises simultaneous irradiation of the photodetector by the optical signal and the polarized reference optical signal.

Claim 63 (new): The system as recited in claim 61 wherein the combining means further comprises simultaneous irradiation of the photodetector with the calibrated wavelength optical signal as well.

Claim 64 (new): The system as recited in claim 60 wherein the combining means comprises a first optical coupler for combining the optical signal and the polarized reference optical signal.

D2

Claim 65 (new): The system as recited in claim 64 wherein the combining means further comprises a second optical coupler for combining a calibrated wavelength optical signal with one of the optical signal and polarized reference optical signal prior to combining with the other one in the first optical coupler.

Claim 66 (new): The system as recited in claim 61 wherein the wavelength calibrator comprises an absorption cell having a calibrated wavelength spectrum.

Claim 67 (new): The system as recited in claim 61 wherein the wavelength calibrator comprises an interferometer array including a supplementary light source.